

NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD

**ALLEY CROPPING**

(Acre)

CODE 311

**DEFINITION**

Trees or shrubs planted in single or multiple rows with agronomic, horticultural crops or forages cultivated in the alleys between the rows of woody plants.

**PURPOSES**

Produce tree or shrub products (wood, nuts, berries, fodder, mulch, etc.) along with crops or forages to improve or optimize the economic viability of the operation. This purpose may be accomplished alone or concurrently with one or more of the following purposes:

- Improve crop or forage quality and quantity by enhancing microclimatic conditions.
- Reduce excess surface water runoff and erosion.
- Improve utilization and recycling of soil nutrients.
- Reduce excess subsurface water or control water table depths.
- Provide food and cover habitat for wildlife.

**CONDITIONS WHERE PRACTICE APPLIES**

On all lands where crops or forages are grown and improvement of the economic or environmental conditions is desired.

**CRITERIA**

**General Criteria Applicable To All Purposes**

The location, layout, species and density of the trees and shrubs will accomplish the purpose and intended function for both the agronomic,

horticultural, or forage crops as well as the trees and/or shrubs. Plant species selection will be based on the following:

- Combinations of crops or forages and woody plants shall be compatible, complementary, and provide the products or crops that meet the landowner's objectives.
- Crops or forages shall be adapted to the climatic region, soil, be marketable and suite the landowner's equipment and management capabilities.
- Crop or forage sequence and woody species selection will be determined using an acceptable nutrient balance procedure. Selected crops, forages and woody species will maximize the utilization and recycling of soil nutrients, animal wastes, plant residues, and maintain soil the organic matter content.
- Crops or forages and woody plants will be selected for proper rooting depth and water requirements which shall not to exceed the available soil water.
- Select pest resistant crop, forage, tree, and shrub species.
- Avoid selecting tree or shrub species which provide habitat to animal, bird, or insect species considered to be pests of the accompanying crop or forage.

The distance between the sets of trees or shrubs will be determined by tree or shrub management objectives, light requirements and growth period of the crops or forages in the alleys, erosion control needs, and machinery widths.

Crops (woody and herbaceous) shall be grown

in a planned conservation management system. Conservation Crop Rotation (328) standard and specifications and the appropriate Residue Management standards and specifications shall be used as guidance for planning cropping systems. Pasture and Hayland Planting (512) and Range Planting (550) standards and specifications shall be used as guidance for species selection, seedbed preparation, planting dates, planting rates, and adaptation of grasses and legumes. Forage Harvest Management (511) and Prescribed Grazing (528A) standards and specifications shall be used as guidance for managing the harvest of grasses and legumes. Nutrient Management (590) and Pest Management (595) standards and specifications shall be used as guidance for nutrient application and pest control.

Tree or shrub rows will be oriented on the contour to control water erosion or perpendicular to troublesome winds to control wind erosion.

Soil erosion by wind or water will be controlled by vegetative or other means until the alley cropping design is fully functional. The Residue Management standards and specifications shall be used as guidance to provide appropriate cover.

Wind and water erosion will be within the soil loss tolerance (T) or any other planned soil loss objective, and shall be determined using current NRCS approved erosion prediction technology.

Planting dates, handling and planting of the seed or seedlings will assure acceptable plant survival.

Only viable and high quality planting stock or seed of adapted woody species will be used for establishing the tree or shrub rows.

Site preparation will be sufficient for establishment and growth of selected species and appropriate for the site.

Tree/Shrub Establishment (612) standard and specification shall be used as guidance for species selection, adaptation, planting dates, site preparation, and spacing for trees and shrubs. Windbreak/Shelterbelt Establishment

(380) standard and specification shall be used as guidance for tree rows which will provide protection from wind.

## CONSIDERATIONS

Crop, forage, tree and/or shrub varieties selected should be used in the management of either the crops, forages, trees or shrubs.

Spacing between the rows of trees or shrubs may be adjusted, within the limits listed above, to accommodate equipment widths and turn-arounds.

Species diversity including use of native species should be considered to avoid loss of function due to species-specific pests.

High value trees or shrubs should be selected to maximize economic returns.

Anticipate possible off-site effects and modify the practice design accordingly.

## ENDANGERED SPECIES CONSIDERATIONS

Determine if installation of this practice with any others proposed will have any effect on any federal or state listed Rare, Threatened or Endangered species or their habitat. NRCS's objective is to benefit these species and others of concern or at least not have any adverse effect on a listed species. If the Environmental Evaluation indicates the action may adversely affect a listed species or result in adverse modification of habitat of listed species which has been determined to be critical habitat, NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid the adverse effects. Further assistance will be provided only if the landowner selects one of the alternative conservation treatments for installation; or at the request of the landowners, NRCS may initiate consultation with the US Fish and Wildlife Service, and/or New Mexico Department of Game & Fish.

. If the Environmental Evaluation indicates the action will not affect a listed species or result in adverse modification of critical habitat, consultation generally will not apply and usually would not be initiated. Document any special considerations for endangered species in the Practice Requirements Worksheet.

## PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

## OPERATION AND MAINTENANCE

The trees, shrubs, crops, and/or forages will be inspected periodically and protected from adverse impacts including insects, diseases or competing vegetation. The trees or shrubs will also be protected from fire and livestock damage.

All other specified maintenance measures and techniques of tree/shrub establishment will be continued until plant survival and establishment are assured. This includes replacement of dead and dying trees or shrubs and control of undesirable competing vegetation.

Any removals of tree or shrub products and use of fertilizers, pesticides, and other chemicals shall be conducted in a manner that maintains the intended purpose.

The type, use and timing of maintenance equipment will be appropriate to accomplish operation and maintenance tasks while not damaging or degrading the site and soil conditions.